

Game Theory & its usefulness to CALFED—Outline

I. Introduction

- The political process intrinsically involves many different stakeholders with conflicting interests. For a governing body to successfully impose a new law, there are questions for which it would be helpful to know the answers. “Who are our most powerful opponents? Proponents?” “What is the most fair way to impose this law?” “Which proposal is most likely to succeed?” “Which one is most likely to fail?” “Who gains and who loses?” Game theory attempts to answer all of these questions. Some methods are concerned with fairness, like the Shapley value. Other techniques are more concerned with bargaining and negotiating, such as the nucleolus and Gately point. The goal of this paper will be to provide a general introduction to game theory, and show how it can be a valuable tool for CALFED.

II. How does this relate to CALFED? Why should we care?

1. Paragraph with general statements and maybe a couple of specific examples but not much explanatory information.
 - There are multiple uses for game theory in the political process. One is for strategic planning. Game theory is a useful tool in the bargaining and negotiating process. It can also be helpful in trying to determine a fair solution to a problem. Game theory can also be used as a cost allocation tool, once a solution has been decided upon. Shapley values, the nucleolus, and the Gately point are all game theoretic techniques that can be used in cost allocation or as strategic political tools. (expand this section some, maybe axe the stuff about cost allocation for this paper? Also have a lead-in to the following section on maximin stuff)
2. Minimax/maximin strategic thinking (non-technical discussion).
 - a. Briefly explain the concept (include a more detailed explanation in the appendix).
 - b. Discuss some of the probable coalitions that have formed and will form among the stakeholders
 - a. How will this affect the CALFED program?
 - c. Show how the different stakeholders in the CALFED process might be using this maximin approach.
 - d. Illustrate with some kind of a table (if possible) the above example.
 - e. What does this maximin stuff all have to do with game theory?
3. Why is Game Theory a useful tool for CALFED in the near future?
 - a. Bargaining and Negotiating and Game Theory
 - b. Return to the example(s) in section II.2.c and II.2.d and do a walk-through on how game theoretical thinking can help you prepare for/better predict these types of situations.

III. Pros and cons of Game Theory

1. Pros
 - a. Concise summary of points brought up throughout the paper
2. Cons
 - Game theory can be very useful, but it does have its limitations, especially with n-person games. While game theoretical models attempt to predict what will happen in the real world, it is impossible to do this with perfect accuracy, because there is no way to include *all* of the variables in a model. In addition, a model is only as good as its characteristic function. When assigning values to coalitions in a characteristic function, you have to make an educated guess in assigning these values or have very accurate data about all of the players in the game. (work on this...possibly reword)
3. Take a stand
 - Game theoretical models of real problems do not give you one "solution," but they can predict what types of decisions by different players are probable, and which ones can be ruled out. Game theory can also tell you which players are likely to work together and which ones will work against each other. (expand)
- IV. Appendix 1: Game Theory: Examples, definitions, explanations (stuff from last paper)
- V. Appendix 2 (if necessary): Minimax/Maximin strategies (short new paper with maybe a couple of examples)
- VI. End Notes/Bibliography